RESPONSES TO ENVIRONMENTAL PROTECTION AGENCY COMMENTS CONCERNING THE DRAFT PHASE I RFI/RI WORK PLAN (DATED 06/22/92)

ROCKY FLATS PLANT
700 AREA
OPERABLE UNIT NO. 8

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

ENVIRONMENTAL RESTORATION PROGRAM
December 1, 1992

INTRODUCTION

The document review comments displayed on the following pages were received from the U. S. Environmental Protection Agency, Region VIII, dated August 12, 1992. These comments pertain to EPAs review of the document entitled Draft Phase I RFI/RI Work Plan, 700 Area, Operable Unit 8; supplements dated June 22, 1992. Responses are provided and follow each comment. The response indicates the position of DOE and the manner in which the comment was addressed and included in the Final Phase I RFI/RI Work Plan dated December 1, 1992.

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INTRODUCTION

The Environmental Protection Agency (EPA) and our technical review contractor PRC Environmental Management, Inc. (PRC) have reviewed the draft phase Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)/Remedial Investigation (RI) work plan, Rocky Flats Plant (RFP), 700 Area, operable unit (OU) number 8 (work plan) which was submitted by the U.S. Department of Energy (DOE). This work plan is dated May 1992 and was submitted in revised form on June 22, 1992. Our combined comments on the subject work plan follow. The general comments address the overall scope of the work plan. Specific comments address the technical merit of particular items. Specific comments have been grouped by chapter and keyed to specific statements by section and page. Comments concerning Appendices A-G are included in the section which references them.

GENERAL COMMENTS

1. The major elements expected in an RI/FS work plan (EPA, 1988) are all present. The focus of the work plan appears to be in agreement with Section VI and Section VII of attachment 2 to the Interagency Agreement (IAG) (DOE/EPA/CDH, 1991). The IAG's focus for the Phase I work plan is to identify sources and define the nature and extent of contamination in affected media. Contaminant fate and transport are expected to be covered in a later phase of RI field work.

Response: *Comment acknowledged. No response necessary.*

2. The work plan has also dropped IHSS 150.5 from consideration, based on the Historical Release Report (HRR) (DOE, 1992) conclusion that IHSS 150.5 is the same as IHSS 123.2. Since IHSS 123.2 has been moved to OU 9, DOE decided that there is no longer any need to discuss IHSS 150.5. The conclusion by DOE may be correct, but until EPA officially approves this the IHSS and a procedure for disposition of IHSSs incorrectly identified in the IAG, dropping IHSS 150.5 is premature.

Response: *Per the September 24, 1992 meeting with EPA and CDH, it was explained that IHSS 150.5 was the same as IHSS 123.2 and that CDH had transferred the latter*

IHSS to OU9. Both agencies accepted that IHSS 150.5 would not be investigated in this plan provided the equivalent location of the two IHSS was adequately documented and explained in the Work Plan (i.e., text and Appendix B).

3. There is confusion in the work plan concerning IHSSs 150.6 and 150.7. Both IHSSs were eliminated without explanation from Section 2 (Site Characterization), Table 2.1, and Table 2.2 of the work plan. Yet these two IHSSs were included in the Section 5 (Data Needs and Data Quality Objectives) and Section 6 (Field Sampling Plan) discussion. A site characterization discussion for both IHSSs should be included in the work plan.

Response: *This comment is unclear. The electronic copy of the plan shows both IHSS 150.6 and 150.7 were included and discussed in sections 2.3.15, 2.3.16, 2.4.16, 2.4.17 and on Table 2.1. Table 2.2 is restricted to "...NON-OU8 IHSS and PACs..." and thus the two IHSS are not listed.*

4. After 14 IHSSs were transferred to OU 9 and three IHSSs (IHSS 150.5, 150.6, and 150.7) were dropped for various reasons, 21 IHSSs were eventually included in the site characterization discussion of Section 2. None of the boundary descriptions for the 21 IHSSs agree with what was shown on the original IAG map. Boundary descriptions for all IHSSs except 150.3, 151, 163.1, 163.2 and 184 were changed in the HRR. Then boundary descriptions for all IHSSs except 137, 138 and 173 (including changes to 150.3, 151, 163.1, 163.2 and 184) were changed again for the work plan, which does not present a convincing case for these boundaries being more accurate than those offered by either the IAG or the HRR. A more adequate explanation would include an IHSS-by-IHSS discussion of how and why boundaries were developed for the IAG and subsequently reconfigured in the HRR and work plan. Additional comments concerning specific IHSSs are given in Section 2 of this report.

Response: *Research and update of the IHSS conditions and boundaries was conducted as part of this Work Plan. This research and the Final HRR (June 1992) demonstrate that several of the IHSS locations and boundaries are inaccurate. Per the September 24, 1992 meeting with EPA and CDH, both agencies accepted that rationale for boundaries (thus, the extent of investigations) would be considered for acceptance provided the changes were adequately documented and explained in the Work Plan (i.e. Appendix B). Rationale for boundary changes are presented in Section 2.3 for each IHSS. IHSS-specific statements or comments must be provided by the reviewers to clarify any rejection of one, several, or all IHSS changes presented in the Plan.*

5. Although the new potential areas of concern (PACs) and under building contamination (UCBs) presented in the HRR are listed in Table 2.2, they have not

been integrated into the work plan. An overall scheme for integrating these areas into the IAG investigations remains to be worked out. This work plan will then need to be revised accordingly either through amendment or technical memorandum.

Response: *Per the September 24, 1992 meeting with CDH and EPA it has been agreed this Work Plan will address only IHSSs assigned to OU8.*

6. EPA RI/FS guidance (EPA, 1988) recommends that all existing data be used to provide a better early understanding of the nature and extent of contamination. Several data sources listed in Table 5 of the IAG have only been referenced on page 4.1 of the work plan and/or in Appendix B. These data sources, and the IHSSs for which they are referenced, include the following:

- Areal Radiological Measuring System (ARMS) Survey (for IHSSs 118.1, 118.2, 173)
- Report(s) documenting the radiometric survey conducted from 1975-1983 (for IHSSs 123.1, 125, 144, 150.1 through 150.8, 163.1, 163.2)
- Information sustaining this unit as a SWMU subject to HSWA corrective action (IHSS 173)
- Results of routine radiation surveys conducted in Building 991 (IHSS 173)

These data sources should be included in the work plan and analyzed in Section 2.4, as was done for data from nearby wells, streams, and stream sediments.

Response: *For each IHSS where ARMS or radiometric surveys were conducted, Section 2.3 contains an evaluation and statement of the results based on the information and data (maps and reported data) available.*

7. Section 2.4 (Nature and Extent of Contamination) contains a detailed review of the available data for OU 8, which consist mainly of release information from the HRR and data from soil and ground-water samples collected as part of sitewide monitoring programs. These data provide only general information regarding the nature of soil and ground water contamination at OU 8. Nevertheless, results of these investigations should be incorporated in the proper portions of Section 5.0 (Data Quality Objectives).

Response: *Section 5.0 has been entirely rewritten in accordance with the format and content of Work Plan approved for other OUs.*

8. The chemical-specific benchmark tables submitted in Section 3.0 of this work plan are the same tables submitted by DOE to EPA on March 25, 1992. The Final OU 8 work plan must incorporate EPA's requested revision to these tables. Section 3.0 did not contain any location - or action-specific ARARs; these two categories of ARARs should also be discussed in the work plan.

Response: *The EG&G Project Manager was contacted and reported back that the benchmark tables incorporated in this Work Plan are the most current available.*

9. The outline of the data quality objectives (DQOs) section of the OU 8 work plan (Section 5.0) generally follows EPA guidance for the preparation of DQOs (EPA, 1987a, b). However, many of the sections in the DQO narrative contain only minimal information about the work to be performed at OU 8. The DQO section of the OU 8 work plan requires significant improvement before it is adequate to direct the planned OU 8 field work.

Response: *Section 5.0 has been entirely rewritten in accordance with the format and content of Work Plan approved for other Ous.*

10. The EPA has requested that DOE and EG&G evaluate the existing site-wide air monitoring network Radioactive Ambient Air Monitoring Program (RAAMP). This work plan does not discuss this pending RAAMP evaluation. This survey should be completed before any new air monitors are proposed for OU 8. The survey may determine that the existing RAAMP is sufficient to characterize air emissions from OU 8, or that more monitors are needed. In addition, this survey should also help:

- Justify the location of ambient air samplers 2 and 4 miles from RFP, or provide data to suggest a more appropriate location of ambient air monitors.
- Provide data to justify the location and number of the 25 samplers located within and concentrated near the main RFP facilities, the 14 that border along major highways to the north, south, east, and west, and the 14 located in metropolitan areas in the RFP vicinity.
- Ascertain the conditions of typical and maximum atmospheric input from OU 8 IHSSs.
- Identify OU 8 IHSS air pathways.

Response: *Comment acknowledged. No new air monitors will be proposed for OU8 until the RAAMP evaluation has been completed. A brief discussion of the RAAMP evaluation process and status has been added to Section 6.0.*

11. While the OU 8 work plan for the human health risk assessment (HHRA) includes the essential comments presented in the Risk Assessment Guidance for Superfund (RAGS) (EPA, 1989a), it does not include pertinent information necessary for a detailed review. For example, future land use assumptions have not been adequately defined and, consequently, exposure scenarios cannot be rigorously assessed.

Response: *Per the September 24, 1992 meeting with EPA and CDH, it was agreed it was inappropriate to provide a discussion beyond that provided herein concerning any potential of future land uses for the Rocky Flats Plant. The Baseline Risk Assessment Technical Memoranda required for OU8 will address this per Attachment 2 of the IAG.*

12. In contrast to most areas of Section 8.0 (Human Health Risk Assessment Plan), which are vaguely outlined, specific criteria for the selection of contaminants of concern (COCs) is presented in sufficient detail. However, this section still requires extensive revision. The criteria proposed for selecting chemicals of potential concern in the HHRA do not correspond to those endorsed by the EPA in RAGS (1989a). Furthermore, the hierarchy of selection criteria in the decision-making process presented in the flow diagram should be rearranged. In its current form, it is possible that human carcinogens could be prematurely eliminated from the risk assessment.

Response: *Comment Acknowledged. See responses to similar and specific comments submitted by EPA for Section 8.0.*

13. The work plan specifies that any ecotoxicological work will be completed after data from the soil, sediment, and surface water sampling programs have been valuated, and only if two of three conditions exist at OU 8. Ecotoxicological studies should not be undertaken outside of those specified conditions without regulatory approval.

Response: *This comment is not specific as to the extent and type of other ecotoxicological work the reviewer feels are appropriate. In view of the overlap of OU9 and OU8, and to expedite the EEW program, this Work Plan states that the EEW for OU8 will be conducted in conjunction with the schedule and protocols presented in the approved OU9 Work Plan.*

14. The most general shortcoming of this plan is that it fails to consider the Protected Area IM/IRA now in development, or other ongoing activities (such as the re-evaluation of the industrial area surface water monitoring program) which makes implementation as written very unlikely. In combination with DOE's apparent lack of commitment to the IAG as documented in other correspondence, this failure reduces the work plan to a paperwork exercise which achieves only superficial compliance with established milestones. Until and unless this work plan can be integrated into DOE's overall approach to the Transition, D&D, and Environmental Restoration of Rocky Flats, EPA sees no reason to grant approval of it.

Response: *Comment Acknowledged. Per the September 24, 1992 meeting with CDH and EPA this concern and statement was discussed. It was decided to continue preparation and development of this Work Plan in accordance with IAG requirements and schedule until directed otherwise.*

SPECIFIC COMMENTS

Section 1.0 - INTRODUCTION

1. Section 1.6.2. Page 1-8: The statement that "the majority of residential use within 5 miles of RFP is located northwest, west, southwest, and south of the existing RFP" appears to be incorrect. The population distribution is depicted differently in Figure 1-4. The text should be corrected.

Response: *The text is revised to "...northeast, east, and south".*

2. Section 1.6.7. Page 1-18: Many of the geologic data to be presented in Appendix C appear to be missing. Footnotes should be added to explain why so many wells have no geologic data associated with them.

Response: *Appendix C has been subdivided according to geologic header information contained. The usage of these tables has been explained by header notes.*

3. Section 1.6.7. Figure 1-14: This figure, surficial geology of OU 8 area, is difficult to read. Geologic contacts and extent of deposits within the OU 8 area are not clearly presented. The figure should be presented with the contacts clearly labeled (See Figure 1-15).

Response: *Quality of map is upgraded.*

4. Section 1.6.7, Table 1.5: Wells with missing or no data are indicated with "**" or "***", yet no footnote is provided regarding the meaning of these symbols, or why data is missing. A footnote should be provided to clarify these symbols and missing data. Also, information in this table does not correspond to data in Appendix D. For example, there are discrepancies between the table and Appendix D for well number 1986 regarding north and east coordinates, surface elevations, and total depth. Table 1.5 should accurately summarize the borehole data in Appendix D and explain any discrepancies.

Response: *Notes of explanation have been provided. This table, now located in Appendix C, incorporates the most current coordinate date from EG&G re-survey of 1986 and 1987 wells and boreholes. Log header data contains coordinate data given at a prior date.*

5. Section 1.6.7.1. : EG&G recently completed "Phase II Geologic Characterization Data Acquisition Surface Mapping" March 1992. This report was not referenced. Relevant information from the report should be used and referenced (for example, sedimentary petrology) in this section. Information in this report could be useful in development of RI and contaminant transport discussions.

Response: *The reference has been added.*

Response: *The report (EG&G March 1992) still retains stratigraphic inconsistencies on page 101 and structural inconsistencies on page 131 which are essential to resolve for accurate contaminant transport interpretation. The revised section on Cretaceous Geology (page 1-23) discusses the formation thickness controversy.*

6. Section 1.6.7.2. Last two paragraphs, Pages 25 and 26: The paragraphs conclude that determination of ground-water flow direction is dependent on which interpretation (interpretation 1 or 2) of the Arapahoe Formation No. 1 Sandstone Deposition is used. Interpretation 1 (single meandering stream channel) results in a north to south flow direction. Interpretation 2 (migrating multichannel and point bar deposits) results in a west to east flow direction. Theses observations are made in the work plan, yet no investigation methods are specified to determine which interpretation in feasible for the OU 8 area. Since an objective of the work plan is to evaluate potential migration pathways, the means by which this question will be investigated and resolved should be explained in the work plan.

Response: *At the 9/24/92 meeting with CDH and EPA , it was agreed the Phase I RFI/RI would concentrate on characterization of the alluvium only and not bedrock.*

7. Figures 1-21 through 1-25: Borehole 3386 shown in Figure 1-22 does not correspond to the borehole log. The borehole log places the top of bedrock at

5,942.5 feet, while cross-section B-B at borehole 3386 places the top of bedrock at approximately 5,947 feet. All cross sections should accurately reflect the borehole log data used to construct them.

Response: *Revisions have been made to cross sections.*

Section 2.0 - OPERABLE UNIT 8 SITE CHARACTERIZATION

1. Section 2.1. Page 2-1: The statement that the OU 2 Work Plan was "provisionally accepted" is out of date and incomplete. Many of the work plans for the other units listed have been reviewed and/or approved. The impact of these other investigations on execution of the OU 8 Work Plan will be small compared to that of the PA IM/IRA and other ongoing activities such as DOE's unilateral rescheduling of IAG activities. The impact of these on the investigation and configuration of OU 8 is what really needs to be discussed here.

Response: *Reference to OU2 Work Plan has been removed.*

2. Section 2.3.1. Page 2-4: According to Table 5 in the IAG there is an ARMS survey available which documents elevated gamma radiation exposure rates for sites 118.1 and 118.2. Since the IAG shows a different location than the work plan, the text should explain why the IAG location and the ARMS survey should be discounted. Also, the map provided in Appendix B for IHSS 118.1 in the correspondence dated April 14, 1992, is unreadable.

Response: *Release is solvents and there is no mention of radiation in HRR.*

3. Section 2.3.3. Page 2-6: The boundaries of IHSS 123.1 should extend all the way to Pond B-1 as shown in the HRR. The work plan states that the boundaries should be shortened because the spill entered a pipeline at the intersection of Sage Avenue and Ninth Street. However, there is no discussion of the type, integrity, or condition of the pipeline, or the distance upstream of Pond B-1 the pipe daylights. This information should be provided before shortening the boundaries.

Response: *Sewers, etc. need to be presumed in acceptable condition until a release is caused specifically by them, as in the case of a line rupturing.*

4. Section 2.3.4. Page 2.8: The boundaries of IHSS 135 may need to be extended to North Walnut Creek. The text states that, water from the cooling tower was allowed to drain into North Walnut Creek. This could have allowed sediments to be contaminated along the drainage path to North Walnut Creek.

Response: *Area north to Walnut Creek is being investigated.*

5. Section 2.3.5. Page 2-8: The reference to Figure 3-1 appears to be incorrect. There is no Figure 3-1 in the work plan. In addition, here and elsewhere in this section, it is unclear what "it has been proposed" means. Where was it proposed, or does this constitute the proposal? If so, say so, and approval of the work plan will formalize the changes in boundaries for the purposes of the investigation.

Response: *Figure reference is corrected. "It has been proposed" has been changed to "it was proposed".*

6. Section 2.3.6. Page 2-9: According to the HRR, on December 8, 1976, about 400 gallons of building 779 cooling tower water containing chromium and some radioactivity leaked into a storm drain near building 779. It subsequently flowed toward collection trench number 6. This storm drain should be included in IHSS 138 boundaries.

Response: *Stormdrain is included.*

7. Section 2.3.7. Page 2-10: Please specify if the "additional" tanks are to be addressed in the FSP or if they are not being "proposed" to be added to the IHSS.

Response: *"Additional" tanks are addressed in FSP.*

8. Section 2.3.21. Page 2-23 and 2-24: Boundaries of IHSS 172 need to be expanded to include the ditch along the northern side of Central Avenue. In describing cleanup activities the HRR uses words such as "cleaned up", "diluted", and "washed down". There is no indication of whether cleanup water was contained. The work plan also states that "an unknown amount of low level material spread to the ditch along the northern side of Central Avenue as a result of this spill".

Response: *Ditch along north side of Central Avenue is included.*

9. Section 2.4.1.1. Page 2-31 Paragraph 3: This paragraph discusses the location of boreholes upgradient and downgradient from IHSS 118.1. It states that the nearest borehole is P114689. However, borehole P114689 is not shown on Figure 2-2. This borehole should be added to the figure or the reference in the text should be corrected.

Response: *Borehole reference now reads P214689.*

10. Section 2.4.1.2. Page 2-36 Paragraph 1: This paragraph discusses ground-water samples from well 2386 and states that the data are presented in Table 2.12. Table 2.12 contains data for well P218080. Also, no data table for well 2386 was found in any of the data tables.

Response: *Table reference changed to 2-10.*

11. Section 2.4.1.6. Page 2-10 Paragraph 1: This paragraph discusses results from well P209089 and refers to Table 2.2.4. This appears to be an incorrect citation. Table 2.24 contains data from well P219189. This discrepancy should be corrected.

Response: *Care has been taken in the preparation of the Final Work Plan to correct Figure and Table citations. The commentor's citation regarding the text could not be located; it is believed the reference is incorrect. EPA (Bill Fraser, 303-294-1081) was contacted on November 25 to clarify the comment in time for inclusion in the Final Work Plan. No response was received.*

12. Section 2.5.2.1. Pages 2-94 to 2-96: Group II contaminant sources - releases associated with fires and explosions - were not discussed in this section. There are several IHSSs associated with these categories of contaminant sources, and a discussion should therefore be provided. In addition, only soils are discussed as a secondary source. Discussion of all secondary sources (see Figure 2.5.2) should be provided.

Response: *A discussion of releases associated with fires and explosions has been added. Discussion of secondary sources has been revised.*

13. Section 2.5.3.1. Page 2-99: The description of specific IHSSs associated with Group I contaminant sources does not include IHSSs 150.4 and 150.5, but these two IHSSs are shown in Group I in Figure 2.5-2. These IHSSs should be included in this description section.

Response: *IHSS 150.4 has been included in Group I. IHSS 150.5 has been removed from OU8 and removed from cited figures.*

14. Section 2.5.3.1. Figure 2.5-3: Surface water is not listed as a secondary source. However, Section 2.5.3.1.1, (secondary sources), states surface water should be considered as a secondary source. Therefore, surface water should be added to Figure 2.5-3.

Response: *Figure has been revised to include surface water as a secondary source.*

15. Section 2.5.3.1.1 Page 2-102: A description of the contaminant source and release mechanism for IHSS 150.4 was not provided. IHSS 150.4 should be included in this section.

Response: *IHSS 150.4 description has been added to section.*

16. Figures 2.5-4 and 2.5-5: These figures do not include a conceptual drawing of the possible sandstone channel shown in Figure 2.5-3, or the possible migration of contaminants through the channel. Section 1.6.7.2 includes two interpretations of a sandstone channel passing under the OU 8 area, and each one may be a possible contaminant migration route. This channel should be accounted for in the conceptual models.

Response: *Sandstone channel has been added to these figures.*

17. Section 2.5.3.3. and Figure 2.5-2: IHSS 151 is not listed in either this section or Figure 2.5.2, but is listed in Section 2.5.3.3.1. IHSS 151 should be added to Section 2.5.3.3 and Figure 2.5-2 or an explanation provided of why this is not considered appropriate.

Response: *IHSS 151 was listed in Section 2.5.3.3 on page 2-111 and was described on page 2-114.*

Response: *IHSS 151 has been added to Figure 2.5-2 (now Figure 2-33) in Group III.*

18. Table 2.34: The heading for Table 2.34 indicates that the table was developed for OU 13. The table should be redeveloped to reflect statistics appropriate for OU 8.

Response: *The heading of Table 2.34 has been corrected to remove any reference to OU 13.*

Section 3.0 - ROCKY FLATS PLANT CHEMICAL SPECIFIC BENCHMARKS

No specific comments were made by EPA concerning this section.

Section 4.0 - RFI/RI TASKS

1. Section 4-3, Page 4.3: One of the activities to be performed during Phase I RFI/RI activities is missing. The first paragraph on page 4-3 states that three types of activities will be performed during the Phase I field investigation. However, only two are listed, screening activities and sampling activities.

Response: *The reference to "Three types of activities..." has been changed to read "Several types of stages activities...". The general types of activities are listed in the paragraph; see page 4-3, paragraph two of the Final Work Plan.*

Section 5.0 - DATA QUALITY NEEDS AND DATA QUALITY OBJECTIVES

General Response: *Section 5.0 has been completely re-written using Work Plans for OU-10, OU-12, and OU-13 as templates.*

1. Section 5.1.3.1. Page 5.4: If a dispersion model is expected to be used to determine ambient air concentrations for organics, a justification for using the model, as opposed to measuring, need to be provided.

Response: *Section 5.1.3.1 has been rewritten consistent with the format used in other RFP Work Plans. Dispersion modeling is no longer discussed in this section. Section 5.1.2.2 now specifies collection of data pertaining to IHSS air pathways to support any air modeling activities.*

2. Section 5.1.3.1, Page 5-5, first paragraph: The work plan states that the RFP 61-meter meteorological tower data will not be suitable for atmospheric dispersion modeling. If these data are not suitable for atmospheric dispersion modeling, the work plan should describe how the data required to support dispersion model-derived ambient air concentrations. If dispersion models are to be used (as suggested on Page 5-8), then adequate meteorological data must be obtainable. It is unclear if the required meteorological data are available (Page 5-5).

Response: *See response to comment No. 1, Section 5.0, above.*

3. Section 5.1.3.1. Page 5-5, last paragraph: The work plan discusses both RFP samplers and RAAMP samplers. It is unclear whether these samplers are the same or different. Also, Page 5-5 of the work plan states "Samplers are operated on a schedule of one day every sixth day", while Page 5-6 states that "During 1990, filters were also collected biweekly from all RFP samplers".

Response: *Section 5.1.3.1 has been rewritten consistent with the format used in other RFP Work Plans. RFP samplers and RAAMP samplers are no longer discussed in Section 5.1.3.1. Within the context of the Final Work Plan this comment is no longer germane.*

4. Section 5.2.1.1. Page 5-10: This section appears within Section 5.2.1, Stage 1 identification of decision types. It provides a list of data and users, but does not discuss the role or types of decisions each entity will be responsible for in the RI

process. The role of listed agencies in planning remedial activities is unclear. Additionally, EPA guidance (EPA, 1987a,b) requires that this section discuss which agencies are the primary data end users and which are secondary data end users.

Response: *The roles of the listed agencies are now grouped as Primary Decision Makers, Program Management, and Technical Personnel. The "requirement" that a discussion of primary data users and secondary data users could not be located in Section 3.0 of Data Quality Objectives For Remedial Response Activities (EPA, 1987). A specific page and paragraph reference should be provided by the commentor.*

5. Page 5-15, Paragraph 3: This paragraph discusses levels of concern but these levels are not included in Table 5.7. Additionally, the levels of concern should be related to ARARs and HHRA based clean up levels. An additional table should be provided if necessary.

Response: *The revised text of Section 5.1.2.3., page 5-9, second and third paragraphs now discuss levels of concern in the light of action levels, detection limits, chemical specific benchmarks (CSBs), and ARARs. Detailed information on CSBs and their relationship to ARARs is contained in Section 3.0. Details concerning the Human Health Risk Assessment are contained in Section 8.0. An additional table does not appear to be necessary.*

6. Page 5-19, Paragraph 1: This paragraph references Table 5-10. There is no Table 5-10. This citation should be corrected or the missing table should be added.

Response: *Section 5.0 has been rewritten to be consistent with the format used in other RFP Work Plans. During revision of the Plan the reference to Table 5-10 was corrected (i.e., deleted).*

7. Table 5.7, Page 2 and 4: This table describes the planned surface scrapes and borehole soil sampling locations. The analyte lists include only total uranium. However, the IAG states that isotopic uranium ratios be provided for several IHSSs. Isotopic analysis of uranium should be added or an explanation for its absence provided.

Response: *Table 5.7 has been deleted. Isotopic analysis of uranium has been included in Section 6.0 of the Work Plan where appropriate to the Current Conditions and history existing at each IHSS. For each media to be sampled, specific analyses to be performed will be defined in the Technical Memoranda to be developed preceding each investigation Stage; agency approval will be obtained prior to implementation.*

8. Table 5.7, Page 6: This table provides information on the planned shallow soil sampling. However, it is unclear why potentially contaminated soil associated with cooling water blowdown from Building 779 (IHSS 138) is being analyzed for radionuclides when potentially contaminated soil associated with cooling water blowdown from Building 774 and 374 (IHSS 137 and 135) is not. This should be clarified in the text or the table.

Response: *Table 5.7 has been deleted. The potential contaminants present at each OU8 IHSS are listed in Table 5.2. Section 6.5 presents investigation rational and reiterates, from Section 2.3, the nature of contamination at each IHSS and lists appropriate analytes.*

Section 6.0 - FIELD SAMPLING PLAN

1. Page 6.1, Paragraph 2: The rationale to select the analyses (sic) of concern does not discuss whether the results of the nature and extent of contamination section (Section 2.4) were used to form this list. The text should discuss the use of the nature and extent of contamination results in this section.

Response: *Corrected; see page 6-1 of Final Work Plan.*

2. Section 6.3, Page 6-8: This section discusses the use of RFP-approved SOPs for the RFI/RI work at OU 8. However, it states that several SOPs are still in the development stage. It is unclear how new SOPs will be approved before being incorporated in the work plan. This should be clarified in this section.

Response: *This statement has been eliminated since it is our understanding that all of the SOPs will be completed by EG&G.*

3. Page 6-14, Paragraph 3: Soil sampling beneath asphalt- or concrete- covered areas is presented as being limited to grab samples. These sites could have been disturbed or had additional soil or gravel added to them before paving. Therefore, some soil profile sampling should be conducted to accurately characterize the soil beneath asphalt- and concrete- covered areas.

Response: *Soil sampling beneath asphalt has been addressed in the field sampling plan (Section 6.4).*

4. Page 6-15, Paragraph 1: This paragraph states that the high purity germanium (HPGe) detector will detect concentrations of gamma-emitting off-site radionuclides in soil samples. It is unclear from this discussion how off-site

versus RFP-derived radionuclides will be differentiated. The text should be clarified accordingly.

Response: *HPGe detection of radionuclides has been clarified in the text (see subsection 6.4.2, page 6-13 & 6-14)*

5. Page 6-15, Paragraph 3: It is stated here that if the information provide by the HPGe does not appear adequate for characterization purposes, the field instrument for detection of low-energy radiation (FIDLER) or the Geiger-Muller (GM) shielded pancake-type detector will be used. It is unclear from this paragraph if the SOP for HPGe operation will provide guidelines for its applicability. This should be clarified in this paragraph or the SOP should be included in the final work plan.

Response: *Use of the FIDLER and G-M methods are no longer proposed as part of the field investigation techniques. Pages 6-13, 6-14 & 6-23 - 6-25 describe radiological survey methods.*

6. Page 6-22, Paragraph 1: Besides collecting soil for leaching test, no other geotechnical data is scheduled from the soil borings. Geotechnical data such as mineralogical composition, grain size distribution, total organic carbon (TOC), cation exchange capacity, and soil Ph should be collected so that bulk density, specific density, porosity, and saturated hydraulic conductivity can be calculated.

Response: *This section has been extensively rewritten to address this and other comments concerning Section 6.4. Geotechnical testing has been advanced to occur in Stage 3 (previously substage 4a). Geotechnical testing (see page 6-28) will include moisture content, grain size, bulk density, porosity, TOC, cation exchange capacity, and soil Ph. These tests were agreed to at the 9/24/92 meeting with CDH and EPA.*

7. Page 6-22, Paragraph 3: Because of the confined conditions in the 800 area, a description of the drilling equipment should be provided. Additionally, because of the expense involved in drilling new monitoring wells, DOE should consider developing some of these sampling wells to monitoring wells.

Response: *Due to the varied nature, terrain, and as-built conditions existing at each IHSS several different types of drilling and sampling equipment are anticipated to be employed. These will be discussed in the appropriate Technical Memoranda, and receive agency approval, prior to their implementation. Also, the appropriate Technical Memoranda may consider and discuss the merits of developing certain borings into monitoring wells. DOE intends to investigate groundwater*

contamination separately during Stage 5, and only if deemed necessary based on results from earlier investigations (i.e., Stages 1 through 4).

8. Table 6.1: This table describes modifications from certain IAG-specified work. It should include a rationale for all such modifications.

Response: *The rationale for sampling to be performed is currently described in sections 2.4 and 6.5.*

9. Table 6.1, Figure 6-4, IHSS 163.2: The proposed sampling plan IHSS 163.2 should be revised. As outlined in Table 6.1 and Figure 6-4, the sampling plan is not adequate to discover the suspected location of a buried, 8-foot square slab. Section 2.4.1.20 states that an 8-foot square concrete slab potentially contaminated with americium is buried in IHSS 163.2. Table 6.1 and Figure 6-4 inconsistently describe where borings will be drilled. A radiation survey using HPGe will be conducted. Yet nowhere in the work plan is information provided to indicate that the borings will be continued until the slab is found or that the radiation survey will definitely be able to locate the slab. The work plan does not indicate that borings and the radiation survey will continue until the slab is found.

Response: *The method proposed to locate the slab has been changed to using geophysical methods followed by borings. It is stated that the purpose of these investigations is to locate the slab and that a TM will propose the drilling program that will be needed to find the slab if the geophysical methods fail.*

10. Table 6-2: The number of soil borings proposed for IHSSs 150.2, 150.3 and 150.7 appears to be lower than that required by the IAG. This discrepancy needs to be justified in the final work plan.

Response: *This will be proposed in TMs subsequent to the initial screening sampling in Stage 2. In addition, Table 6.2 has been dropped.*

Section 7.0 - TASK SCHEDULE

1. Figure 7.1, Page 7-2: The schedule for item 5, EPA and CDH Approval of Final Work Plan, appears to be overly optimistic. It is unreasonable to expect approval the same day as submittal.

Response: *This review applies to the PMP (Project Management Plan) and is corrected on the schedule.*

2. Figure 7.1: The meaning for item 7, EG&G/RFP/DOE review approval, is unclear. The referenced document for which this review and approval is sought should be clarified.

Response: *This review applies to the PMP (Project Management Plan) and is corrected on the schedule.*

3. Figure 7.1: A listing of the interim deliverables to be provided between stages of implementation must be provided (perhaps in Section 6.0) and this figure must indicate the submittal dates and account for the review processes expected to be applied to them.

Response: *It is assumed the reviewers comment concerns the various stage and interim Technical Memoranda to be implemented throughout the investigations. The period of performance for each stage and development of the Tms are indicated on the schedule.*

4. Figure 7.1: Page 8-2 references four technical memoranda which will be prepared for review and approval related to the HHRA: contaminants of concern, exposure scenarios, fate and transport models, and toxicity values. Submittal dates, or at least submittal periods, should be included in Figure 7.1 for these documents.

Response: *Same as above.*

Section 8.0 - HUMAN HEALTH RISK ASSESSMENT PLAN

1. Section 8.1.1, Page 8-2, Second Paragraph: The present work for OU 8 represents a general outline for conducting a HHRA. The technical memorandum that will subsequently be submitted to the EPA should, therefore, not just "outline how the most crucial steps in the risk assessment will be performed". It should present comprehensive and detailed information that will be included in the risk assessment.

Response: *The paragraph has been changed to include the following - "...will be performed and will present comprehensive and detailed information that will be included in the risk assessment. The technical memoranda will address the following:".*

2. Section 8.1.1, Page 8-2, Second Paragraph: This section cites several DOE documents as sources of exposure and radiation dose. Although these documents may be helpful for some types of exposures, exposure parameters in DOE guidance are based on International Commission on Radiological Protection

(ICRP) guidance. ICRP guidance provides protective radiologic standards for occupational exposures. Exposure assumptions that estimate radiologic exposure and dose in the general population should be used, as found in RAGS (EPA, 1989a), which specifically addresses differences in the general population. The exposure factors handbook should be used as the primary source for input parameters. Exposure factors independently derived in the HHRA must be submitted in the technical memorandum and approved by EPA prior to completion of the HHRA. The sources of the data used to derive these values must be well documented and referenced.

Response: *Reference added to bulleted list of documents in this subsection. This statement has been added to Subsection 8.1.1, paragraph four.*

3. Section 8.1.2. Page 8-4, Third Paragraph: Although DOE's current projection for future RFP land use is as an ecological preserve, it has not been firmly established in the form of a covenant or land-use restriction. Therefore, the conservative exposure assumptions that apply to a residential scenario should be used to estimate the potential risk to future on-site residents. This will establish an upper-bound risk estimate to compare current off-site residents and future industrial an ecological site workers.

Response: *At the 8/29/92 meeting, DOE stated that a scenario considering on-site residents at RFP industrial area was impractical for the future land use and risk assessment.*

4. Section 8.1.2. Page 8-5, Second Bullet: Exposure to volatile organic compounds should be included, together with the mentioned particulate phase, as a potential exposure pathway for nonradiological contaminants in surficial soils.

Response: *This bullet is changed to include the insert "...nonradiological constituents in surface soil...".*

5. Section 8.2.1. Page 8-6: Plans to collect background data are conspicuously absent from the data collection section. Characterizing the background of inorganic chemicals is prerequisite to eliminating them from the HHRA. If background concentrations will be used to eliminate chemicals from the HHRA in selecting contaminants of concern (COCs), a full description of methods and locations should be included.

Response: *At the 8/29/92 meeting with CDH and EPA, the agencies agreed to provide a letter to DOE stating the urgency and need for background studies. This will assist DOE in obtaining the necessary funding. Until funding is obtained CDH agreed background studies would not be included in this Work Plan.*

6. Section 8.2.1, Page 8-7, Bullets 7 and 8: Including field conditions and sample documentation, such as the chain of custody and SOPs, in the HHRA is not necessary. Although a site description and detailed information on sample locations should be included in the RFI/RI report, the two proposed sections will be extraneous to the HHRA. This information is best presented elsewhere in the RFI/RI report in sections prefacing the risk assessment.

Response: *Accepted. There are not 8 bullets in this subsection; however, bullets 6 and 7 have been deleted.*

7. Section 8.2.2, Page 8-8, Second Paragraph: All contaminants detected at least once should be included in the HHRA in the section containing a data summary of chemicals detected in each medium. It is unacceptable to state that if only a few tentatively identified chemicals (TICs) are reported, they will be excluded from the HHRA, whereas if numerous TICs are reported and "they appear related to the RFP", they will be carried through the HHRA. Decisions regarding the frequency of detection and the relationship of chemicals to the site cannot be made ahead of time. These decisions must be deferred until COCs are selected. During this stage, chemicals detected at less than a pre-established frequency of detection benchmark, usually set at 5 percent, can be eliminated from the risk assessment.

Furthermore, chemicals lacking toxicity values should not be unilaterally excluded from the risk assessment before EPA Region VIII toxicologists are notified. In the event that it is not possible to derive toxicity values for particular chemicals, a qualitative discussion of potential adverse effects is required.

Response: *This paragraph has been changed to delete text that states TICs will be eliminated if it occurs a "few" times or includes only those with "numerous" occurrences.*

8. Section 8.2.4, Page 8-9, First Paragraph: The criteria to select COCs should be included along with the list of COCs in the technical memorandum submitted for review and approval.

Response: *Per the 9/24/92 meeting with CDH and EPA, it was accepted the fourth sentences be changed to include "...substances present and the criteria for their selection will be prepared...".*

9. Page 8-9, Second Paragraph: It is not clear what "an anomalous area" is. As described, it appears to refer to a hot spot. This paragraph should be clarified and the term "anomalous" should be defined.

Response: *The section of text is changed to indicate anomalous areas as those not previously known and/or outside of the boundary(s) of the IHSS, as currently defined.*

10. Section 8.2.4, Page 8-9, Figure 8-3: The procedure selecting COCs has major design flaws and violates the established principals in RAGS. No Class A carcinogens should be eliminated from the HHRA, even if the frequency of detection is less than 5 percent and the on-site concentration is not statistically different from background. The statement in the work plan that the carcinogenic screening step "does not eliminate a chemical from further consideration. Instead, it automatically identifies carcinogens for inclusion in the risk assessment, even if detected at low concentrations" is disingenuous, since potent human carcinogens could have been previously eliminated. This section must be revised in accordance with comments provided on the appropriate OU 1 HHRA Technical Memoranda.

Response: *At the 9/24/92 meeting with CDH and EPA, DOE stated the risk assessment would not be performed on Class A carcinogens at or below background concentrations. This has been clarified in the text of subsection 8.2.4, paragraph six.*

Section 9.0 - ENVIRONMENTAL EVALUATION WORK PLAN

1. Table 9.1: The potential target taxa listed are not the same as have been identified in other work plans for the industrial area Ous. The table should be revised or deleted.

Response: *At the instruction of EG&G Project Manager, Table 9.1 has been deleted from this text. A document reference has been made in the text to the approved OU9 EEW Work Plan Technical Memoranda (June, 1992). Excluding the table and referencing the reader will insure the correct and most current list of the taxa/species-of-concern will be addressed by the reader.*

Section 10.0 - QA/QC PROCEDURES AND ADDENDUM

1. Section 10.1.12.1, Page 19: This section discusses field equipment to be used during the Phase I RFI/RI, including equipment for radiological surveys. However, it does not discuss the HPGe instrument. Some discussion of the HPGe instrument operation should be included in this section.

Response: *At a comment review with the agencies on 9/24/92, EPA agreed with DOE that discussion of the HPGe was not appropriate in this section of the text.*

SECTION 11.0 - REFERENCES

General Response: *No specific comments concerning the references were made by EPA. A list of references cited in its comments was provided by EPA; pertinent references that were included in addressing the comment and revising the Final Work Plan text have been included in the list references.*

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